are really not difficult to demonstrate to a jury if a properly trained psychopathologist is employed.

This was demonstrated very clearly in the case of Hill v. Chicago, Milwaukee & St. Paul Railroad, at Redwing, Minnesota, December, 1911. Here the psychogenetic nature of an affection which simulated lameness alleged to be due to sacrao-iliac and lumbar injury was so clearly shown the jury that instead of $15,000 damages demanded the allowance given was merely $1,500 for loss of time and stress of mind. This was a particularly "dangerous" case from the forensic aspect; but the railroad had become weary of paying indemnities for psychological accidents, and made this test case. The crucial point depended upon a demonstration by the neurologist that the attitude and movements of the patient did not conform to a syndrome which should have been present had the injury been where believed. This, along with the integrity of the reflexes and lack of wasting, convinced the jury that no lesion was present.

In conclusion, let me emphasize the importance of the fact that functional nervous syndromes which occur after accidents differ in no way from those found in persons who have been subjected to no accident at all. The accident then was a red herring across the trail of the real cause of the psychoneurosis. These doctrines have already been elaborated by me with numerous illustrations.

BIBLIOGRAPHY.

Traumatic Neuroses and Babinski's Conception of Hysteria, Transactions of Congress of Industrial Actions, Rome, and Medical Record, 1909.

Successful Psychotherapy of Traumatic Neurosis, Amer. Jour. Surg., 1909.

Idea and Affect in Traumatic Neurosis, Jour. Abnor. Psychol., 1910; also Charlotte Med. Jour.

Psychic Affect of Accidents, Transactions of Southern Railway Surgeons, 1912, and Monthly Cyclopedia.

Occupation Neuroses, International Congress on Hygiene, 1912; Medical Record, 1913; Transactions of International Congress of Medicine, 1913; Cleveland Med. Jour., 1914.

Treatment of Hysteria, Jour. Amer. Med. Assoc., November, 1912.

Hysteria and Pseudohysteria, AMER. JOUR. MED. SCI., September, 1910.

Mental Healing, British Med. Jour., vol. ii, 1913.

GRANULOMA FUNGOIDES.[1]

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THIS condition, first described by Alibert in 1834, is a cutaneous disease which since then has been the object of investigation by many authors. Nevertheless, the origin of the disease still remains obscure.

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[1] Presented before the Pathological Society of Philadelphia, April 9, 1914.

An instance of this condition came under my study at the Samaritan Hospital. The case was kindly referred for my pathological study by Dr. Edward B. Finck, to whom I wish to express my thanks. The history of the case is as follows:

J. T., male, aged thirty-four years; white; born in the United States; occupation, steam-fitter.

Family History. The family history is negative so far as his present condition is concerned.

Personal History. He was perfectly well until twelve years ago, when he noticed the appearance of a rash, first on the trunk, and then it spread to other parts of the body. Itching was intolerable. He was under the care of various physicians without getting much relief. A year ago a few small tumors developed. About seven months ago a few large tumors appeared, involving chiefly the shoulders, trunk, and neck. At this time he came under the observation of Dr. Finck.

On examination we find the tumors situated upon the shoulders, neck, and trunk. In between these tumors there are large areas of scaly eczematoid appearance, diffuse, and intensely itching. The tumors number from twenty to thirty, and vary in size. Some are as large as a pea, others attain the size of a large tomato, especially those which are situated upon shoulders and neck. The color of most of the tumors is bright red and some are of a dull-red color. On palpation, fluctuation is present in the greater proportion of the tumors. The lymph glands at the time of examination are not enlarged; however, the patient said upon questioning that the inguinal glands became large at times and then returned to normal size. Several of the tumors show slight ulcerations. The patient was transferred to the Polyclinic Hospital.

The blood examination was as follows:

Wassermann reaction negative: Red-blood cells, 4,960,000; white-blood cells, 20,200; hemoglobin, 62+. Differential count: small lymphocytes, 15; large lymphocytes, 4; transitionals, 2; polymorphonuclears, 81; basophiles, 0; eosinophiles, 0; color index, 0.63.

A nodule was excised from the left hypochondriac region, fixed in formalin, and embedded in colloidin. Section stained with hematoxylin and eosin, polychrome methylene blue, Mallory anilin blue, Giemsa's; a piece of tissue was likewise treated by Levaditi's method. The pathological report is as follows:

The tumor is ovoid, somewhat roundish; long diameter, 3 cm., transverse diameter, 2 cm., and of a semisolid consistency. The capsule of the tumor is somewhat thick and firm.

The microscopic picture is as follows:

In places where the infiltration is slight the papillæ are well preserved; in other areas where the infiltration is dense the papillæ are thinned and flattened out. In some places there seems to be an infiltration with small round cells which occupy preformed spaces between the Malpighian layer and stratum lucidum. The subepithelial connective tissue seems to be masked by dense infiltrations of cells which vary greatly in their morphology. However, the bulk of the infiltrated areas is made up of small round cells poor in protoplasm; their nuclei stain intensely with the basic stains and resemble lymphocytes. Besides these small round cells there are scattered throughout the corium somewhat ovoid cells larger than the round cells; they are pale, vesicular, and show many mitotic figures. Several giant cells are also observed. The collections of cells are surrounded by loose connective tissue. In some places the connective tissue is undergoing degeneration. Imperfectly developed capillaries are present. The majority of the capillaries are filled with round cells. Sweat glands are encircled by dense accumulations of the small round cells. The epithelial lining is undergoing proliferation.

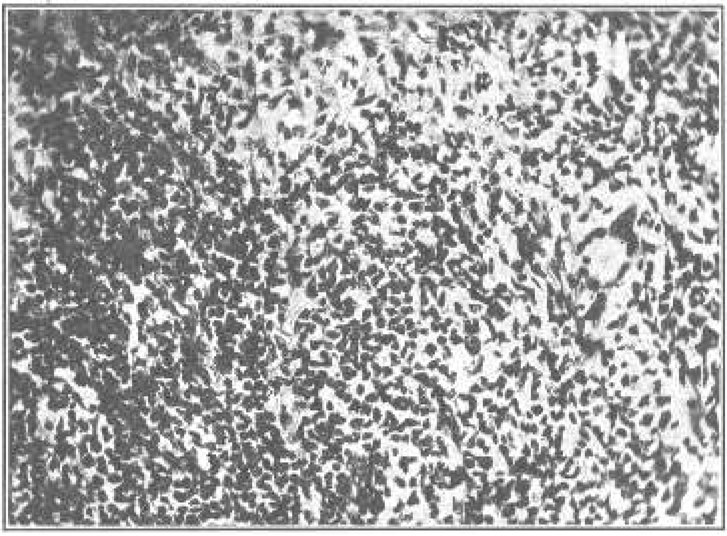

Fig. 1.—Microscopic picture of the specimen of our case. 1, note the dense cellular infiltration; 2, great variety of cells; 3, giant cell.

Although Rindfleisch, Auspitz, Hammer, Vidal, and others have described microörganisms in the lymphoid tissue of cases of granuloma fungoides, yet the germ cultivated and inoculated into rabbits from a similar condition by Lassar and Doenitz did not provoke the pathological lesions characterizing granuloma fungoides. In our case the appearance of what would suggest some micrococci represents probably granules of broken-down cells. It remains for the future to determine the definite etiological factor. Yet there are some points collected from the literature which seem to have an etiological bearing upon the disease. Thus it seems to have occurred not more than once in a family. In our case the family history is negative. Previous venereal history has been eliminated in our case by the negative Wassermann. It has occurred more in the male sex and in individuals of robust constitution and over thirty years of age. However, there was a case reported before twenty years of age. Our patient in regard to age comes within the general rule. The pathology offers a good deal of speculation and the histological picture of the lesions helps us to understand the clinical manifestations of the disease.

Granuloma fungoides occurs in two forms:

1. A form with a prefungoid stage, "erythermie mycosique" of Hallopeau and Besnier.
2. A form without a prefungoid stage, the "tumeurs d'emblée" of the French school.

The above classification is essentially in accordance with the views of Crocker, Unna, and the more modern authors.

The prefungoid stage may last for months and years. In our case it lasted for twelve years. It is characterized by a scaly or vesicular or by a dark-red, sharply circumscribed rash, or by a sort of urticaria. The dermatoses may appear and disappear several times before the tumors develop. The prefungoid stage is the most difficult to diagnose. In this stage the pathological changes are limited to the subpapillary vascular layer of the skin. Lerrede found a proliferation of fixed connective-tissue cells around the bloodvessels; likewise he observed some mast cells. Unna lays great stress upon the dilatation of blood and lymph spaces, which are prominent in this stage. This latter point stands in direct contrast to granuloma of tuberculosis and syphilis where the bloodvessels are obliterated. On account of the dilatation of the vessels in the papillæ there appears the hyperemia and edema of the skin. The edema of the skin in some cases forms a characteristic feature of the prefungoid stage. By and by the changes extend to the cutis until the hair follicles and glands disappear. This, however, occurs late. Before they are affected tumors may have formed; the epidermis becomes protruded, due to pressure occasioned by the cellular infiltration from beneath; then tumors form. They form nodules the size of a walnut or fist, and are of a bright red color. The tumors are sharply defined, more and more elevated, and then assume the appearance of tomatoes not only in their size and color but in structure, the capsule being thick and the contents semisolid.

The tumors develop on any part of the body or may be confined to the face, axillæ, or to a limb. In severe cases they may spread all over the body. In our case they are located on the shoulders, trunk, arms, and neck.

The tumors may form without a preceding erythema, "tumeurs d'emblée." In this form the number of nodules is more limited than in the first one. The microscope shows that the tumor stage is an exaggeration of the prefungoid stage.

The tumor consists of loose connective tissue which encircles groups of cells which vary greatly in size and shape. In our case the cells as detailed above are small round cells; they are poor in protoplasm; the nuclei take an intense basic color; they are at best brought out by the polychrome methylene blue stain. These cells make up the bulk of the tumor. Some of them can be traced, penetrating the layers of the epidermis, and in one or two places in our sections they have accumulated in spaces between the Malpighian and stratum lucidum. Then one observes short spindle cells scattered in between the groups of the small round cells. The origin of the spindle cells is a matter of speculation. Cells somewhat ovoid, larger than the round cells, are noticed. The nuclei of these cells are paler than those of the small round cells; many of these cells show mitotic figures, and likewise one can see that these cells are undergoing crenation and fragmentation; what appear have rings of granules, probably the remnant of the ovoid large cells. Whether these cells correspond to the cells described by Unna as specific of granuloma fungoides we are not prepared to say.

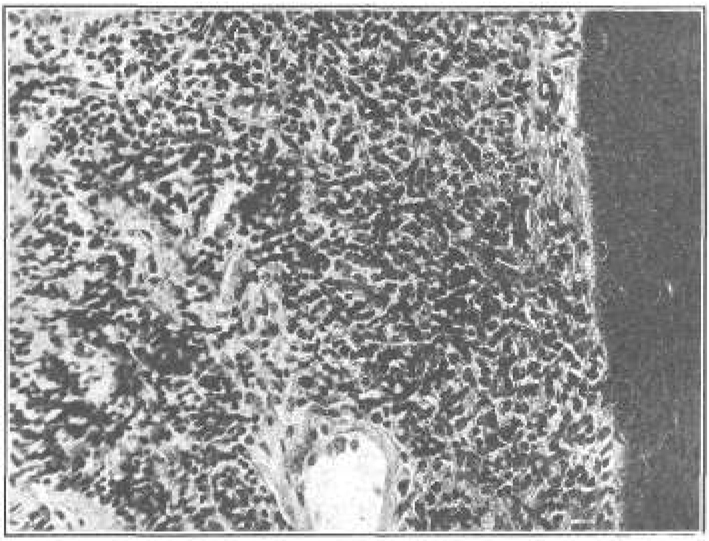

FIG. 2.—Note the flattened-out papillæ; 2, blood-spaces are filled with cells similar to those that make up the bulk of the tumor.

An interesting question arises as to the source of the cells. Lerrede representing the French school, and Poltauf, the Austrian, believe that the cells are partly derived from the lymphocytes of the blood. From the study of our case we are inclined to share Unna's view-point that the cell infiltration is derived from the connective tissue; for were the origin of the cells the blood then the blood analysis ought to show some changes, while this is not the case, as in our patient the small lymphocytes were fifteen and the large lymphocytes 4 per cent.

In our sections a few dilated bloodvessels are seen which in addition to the red cells contain cells similar to those found in the tumor. This fact would show that the tumor cells are being carried away from rather than being brought to the tissue affected. Besides the above cells we have seen one or two eosinophiles; several giant cells were also observed.

Plasma and mast cells have been reported to have occurred in cases of Galloway, Macleord, Lerrede, etc.; in our case sections stained for them did not reveal any.

The connectve tissue of the subepithelial layer in our sections has become obscured by the cellular infiltraton. In some areas the connective tissue is degenerated (it stains pale pink with Giemsa's stain). The degeneration probably results from the pressure exerted by the cellular infiltration. In between the cells of the tumor one can find occasional fine fibrous threads.

In the prefungoid stage Unna claims that the elastic tissue is preserved. On account of this latter finding, Ranvier has classified the condition under cutaneous lymphadenie, the tissue resembling a lymphoid structure, yet this view-point is rejected by the more advanced work on the subject.

In our case the cells in some places go as deep as the subcutaneous fat tissue; however, they do not penetrate the underlying deep structures. Some of the hair follicles and sweat glands are embedded in a collection of small round cells, and in some places the sweat glands have undergone proliferation. The question whether the proliferation of the glandular epithelium is due to a stimulation caused by the cell infiltration or whether it is secondary to a toxin irritation can be speculated upon.

Whether there is some newly formed connective tissue or what appears to be connective tissue is merely the contrast between the displaced connective tissue by the cells and the tissue that is left is difficult to determine. It seems to us, however, that the cellular infiltration might have lodged upon the connective tissue and obscured it; and after the cells have become fragmented and absorbed then the preëxisting connective tissue came again to the front. This may explain the clinical picture of absence of scar tissue after spontaneous healing of the tumors.

The tumors may appear two or three years after the rash, or a longer interval of time may elapse. Our patient developed the tumors twelve years after the beginning of the rash. These tumors when properly treated usually do not recur, and when treated early they do not provoke any constitutional symptoms or cachexia. If allowed to go on untreated the patient usually dies from exhaustion or from toxemia as a result of necrosis that takes place in the tumors. An interesting point about the tumors is that they do not give metastasis to any of the internal organs. However, cases with metastasis in the spleen have been reported. Duhring and Galliard also observed what appeared a metastatic growth in the bladder. Kaposi and Poltauf and others have reported metastatic tumors in the liver, pancreas, kidney, etc. Brandweiner has found metastatic growth in the brain. These cases are exceptional, and then it is questionable whether the metastatic tumors are of the same histological structure as the granuloma of the skin. It might be that a secondary lymphosarcoma has developed upon the site of the granuloma with the metastasis.

More commonly there is a hyperplasia of the lymphatics in various parts of the body.

Another interesting feature about these tumors is their spontaneous disappearance without leaving any trace behind them. The reason for it has been given above.

Granuloma fungoides must be differentiated from (1) sarcoma, (2) leukemia. Sarcoma arises from previously healthy skin; granuloma fungoides from a previously diseased skin. Sarcoma grows progressively in depth and involves the neighboring tissues; granuloma fungoides grows more in width and never penetrates the underlying neighboring tissues; sarcoma gives metastasis to the internal organs; granuloma fungoides rarely gives metastasis Clinically, sarcoma runs a different course than granuloma fungoides; it does not tend to a rapid appearance and subsequent disappearance by absorption and necrosis as seen in granuloma fungoides.

Histologically: In sarcoma the cells are more uniform in size and shape and the deeper layers of the cutis are involved first and the epidermis not at all unless it breaks down. In granuloma fungoides there is a great variety of cells and the infiltration is superficial.

From leukemia it must be differentiated, for there are a great many authors, especially of the French school (Lerrede), and only recently Pellagiti, who have attempted to bring forth evidence as to granuloma fungoides being one of the manifestations of leukemia. However, the general clinical picture and blood-findings of leukemia are sufficient proof to the contrary.

In conclusion we would state, (1) granuloma (mycosis) fungoides is primarily a chronic, cutaneous disease of unknown etiology; (2) the histological picture explains the clinical manifestations of the disease, such as the erythema and edema of the skin of the prefungoid stage, the tumor formation, and the spontaneous appearance and disappearance without any scar tissue left behind them.